

CLAIMS:

1. In an anode for a lithium battery having a conductive substrate coated with a pressed compact of spherical graphite and an ion conducting polymeric binder, the improvement comprising:

the inclusion of up to from 1.5 to 15% by weight of carbon nano-fibres in said pressed compact.

2. The anode of claim 1 wherein:

said spherical graphite is meso-phase carbon micro-balls;

said carbon nano-fibres have an average diameter of about 200nm, a length of from 10 to 20 μ m and an inner core diameter of 65 to 70nm.

3. The anode of claim 2 wherein:

said carbon nano-fibres are included in an amount of from 2% to 9% by weight.

4. The anode of claim 3 wherein:

said carbon nano-fibres are pretreated vapour grown carbon fibres.

5. The anode of claim 4 wherein:

said nano-fibres were subject to vacuum at a heat treatment temperature of from 40° to 140°C for a period of from 2 to 8 hours prior to mixing with said spherical graphite.

6. The anode of claim 4 wherein:

said nano-fibres were subject to vacuum at a heat temperature temperature of from 45° to 80°C for a period of from 2 to 8 hours after mixing with said spherical graphite.

7. The anode of claim 6 wherein:

said conductive substrate is copper foil.

8. In a non-aqueous lithium battery having an anode of a conductive substrate coated with a pressed compact of spherical graphite and an ion conducting polymeric binder, the improvement comprising:

the inclusion of up to from 1.5 to 15% by weight of carbon nano-fibres in said pressed compact.

9. The lithium battery of claim 8 wherein:

said spherical graphite is meso-phase carbon micro-balls;

said carbon nano-fibres have an average diameter of about 200nm, a length of from 10 to 20 μ m and an inner core diameter of 65 to 70nm.

10. The lithium battery of claim 9 wherein:

said carbon nano-fibres are included in an amount of from 2% to 9% by weight.

11. The lithium battery of claim 10 wherein:

said carbon nano-fibres are pretreated vapour grown carbon fibres.

12. The lithium battery of claim 11 wherein:

said nano-fibres were subject to vacuum at heat treating temperatures of from 40°C to 140°C prior to mixing with said spherical graphite.

13. The lithium battery of claim 12 wherein:

said nano-fibres were subject to vacuum at heat treating temperatures of from 45°C to 80°C after mixing with said spherical graphite.

14. The lithium battery of claim 11 wherein:

said conductive substrate is copper foil.

15. The anode of claim 5 wherein:

said vacuum is from 1 torr (1mm of Hg) to 10 torr (10mm of Hg).

16. The lithium battery of claim 11 wherein:

said vacuum is from 1 torr (1mm of Hg) to 10 torr (10mm of Hg).

17. The anode of claim 6 wherein:

said vacuum is about 1 torr (1mm of Hg).

18. The lithium battery of claim 12 wherein:

said vacuum is about 1 torr (1mm of Hg).

19. A rechargeable lithium battery having an anode containing graphite as an electro-active component and wherein:

said graphite comprises from about 1.5 to 15 weight% carbon nano-fibrils.